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7590 06/23/2003
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EXAMINER

MICHENER, JENNIFER KOLB

| | |
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| ART UNIT | PAPER NUMBER |
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1762

DATE MAILED: 06/23/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/844,666

Applicant(s)

KEICHER ET AL.

Examiner

Jennifer Kolb Michener

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) 29-61 and 64-67 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 and 62-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other:

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DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-28 and 62-63 in Paper No. 12 is acknowledged.

Examiner's Suggestions/Interpretations

2. The words "material" and "feedstock" appear to be used interchangeably in claim 1. Examiner suggests Applicant select one term to use consistently.
3. The use of the phrase "said laser beam" in various claims dependent on claim 1, which requires a "beam of energy", has been interpreted as further limiting said beam of energy to a laser beam.
4. Applicant uses the phrase "substantially parallel" in claim 1. Parallel is defined by Webster's as "extending in the same direction, everywhere equidistant, and not meeting". Examiner interprets the phrase "substantially parallel" to require that the feedstock and energy beam extend in the same direction, *substantially* equidistant along their paths, and not meeting.
5. In claim 1, line 5, the phrase "said beam" is interpreted by Examiner to refer to the beam as it is being applied to "said material".

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6. While Examiner recognizes that Figure 1 is merely a schematic showing (page 20, line 23 of instant specification) of the embodiment shown in Figures 1 and 2, it would coincide better with Figure 2 if the laser were not depicted as entering the deposition head from above, turning a right angle. It would be more consistent with the teachings of the specification (page 22, lines 6-8) and the showings of Figure 2, if the laser were shown in Figure 1 entering the schematic after the feedstock material is ejected from the deposition head **16** nozzles.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1, 2, 6-14, 17-27, and 62 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The phrase "beam of energy" appears to be new matter. Examiner is unable to find, in the originally-filed disclosure, basis for this limitation. The instant specification refers only to the use of laser beams, therefore, there does not appear to be basis for the broad claiming of all types of beams of energy.

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Claims 3-5, 15-16, 28, and 63 are not included herein because these claims further specify the use of laser beams as the energy beam, which is supported by the originally-filed disclosure.

9. Claims 1-28 and 62-63 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 1 the highlighted phrase of the following limitation added in the preliminary amendment requiring “applying a beam of energy to said material, said beam of energy being transmitted in a direction which is substantially parallel to the direction of flow of said feedstock” (emphasis added) appears to be new matter. Examiner is unable to find, in the originally-filed disclosure, any basis for a parallel requirement. Particularly, there is no teaching of the use of a laser beam that is parallel to the direction of flow of the feedstock material when the beam is applied to the material. Even the lines of Figure 1 would not support the parallel limitation because Applicant’s specification on page 20, line 23 states that Figure 1 is merely a schematic showing of the deposition application. Figure 2 depicts the actual application of the laser beam to the feedstock as occurring perpendicularly. The specification states that this application occurs after leaving the deposition head **16** via nozzles. At the time of applying the beam to said material, “said beam” is claimed to be transmitted in a parallel fashion. However, the figures and specification do not show

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application in parallel. To the contrary, at the time of application, said beam is directed perpendicularly.

10. Examiner notes that the MPEP requires Applicant to provide page and line numbers as evidence of basis for the addition of new limitations.

11. Claims 1-28 and 62-63 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 requires "applying a beam of energy to said material, said beam of energy being transmitted in a direction which is substantially parallel to the direction of flow of said feedstock". Applicant does not describe in his specification, in such a way to enable one skilled in the art, how to apply a beam of energy to the feedstock if the beam of energy and the feedstock are transmitting and flowing parallel to one another. The definition of parallel requires that the beam of energy and feedstock not intersect. The embodiments of the specification clearly state throughout that one or more feedstocks are passed through one or more laser beams. Therefore the claimed subject matter requiring parallel, i.e., non-intersecting, feedstock and laser beams is not described in the specification in such a way as to enable one skilled in the art to which it pertains, to

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make and/or use the invention because the specification requires passing the feedstock through the laser beams.

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 28 depends on claim 1. Claim 1 requires the feedstock and energy beam both to be perpendicular to the substrate. Claim 28 requires the laser beam(s) to be focused parallel to the substrate. It is not clear what the scope of the claim is intended to be as these two limitations are in direct contradiction.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Matsuda et al. (4,947,463) is cited for teaching a laser spraying process in which a spraying material is fed into a high energy density zone where it is intersected and melted by a laser beam and is blown onto a base surface along with a carrier gas.

Ranalli ((5,607,730) teaches laser coating by intersecting a cloud of coating particles and inert gas with a laser beam, causing the particles to melt and come into contact with the substrate.

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Funkhouser et al. (5,449,536) teach laser spraying a coating onto a metal substrate by injecting a metal powder coating into the hot zone of a laser path above the substrate to be coated.

Wang (5,733,609) teaches coating a highly precise ceramic pattern on a substrate and/or discrete multi-layers in vast varieties of chemical compositions by focusing laser beams on reactive coating materials, applying an electric field to the ion coating material, and coating the substrate.

Thaler (5,612,099) teaches coating a substrate by irradiating metallic powder with a pulse of laser energy and depositing onto a substrate.

The above references do not teach application to a substrate of the laser and feedstock materials parallel to one another, with the substrate being oriented perpendicular to the directions of flow of the feedstock and laser.

Schaefer et al. (4,200,669) is cited for teaching the supply of powder into a laser beam.

While Figure 1 appears to show 2 laser beams substantially parallel to the powder feedstock, it is noted that the two dashed lines indicate a single laser beam. In which case, the powder feedstock and laser beam directions merely coincide, but are not parallel, as defined above (i.e., equidistant and non-intersecting).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Kolb Michener whose telephone number is 703-306-5462. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on 703-308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in black ink, appearing to read 'J. Kolb Michener', with a stylized, cursive script.

Jennifer Kolb Michener
Patent Examiner
Technology Center 1700
June 17, 2003